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APPLICATION FOR UTILITY PATENT

TO ALL WHOM IT MAY CONCERN:

Be it known that FRANK CORDIALE is a citizen of the United States and has designed a new BRUSHLESS ELECTRIC MOTOR of which the following is a specification:

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BRUSHLESS ELECTRIC MOTOR

Background-Field of Invention

This invention relates generally to the field of electro-magnetic prime movers.

Description Of The Prior Art

The prior art includes inductors and some prime movers with singular coils. The problem with singular coils is reversing the current causes heat loss and control problems. The Inventor's approach uses a single cylinder with two separate coils which are controlled with on/off switches. Thus, the current is merely interrupted and not reversed, resulting in lower heat losses and a more efficient engine.

Summary & Objects of the Invention

A first object of the invention is to provide an electric-powered prime mover.

A second object of the invention is to provide an electric motor that will operate submersed in fluid.

A third object of the invention is to provide a quiet piston motor.

A fourth object of the invention is to provide a low friction loss motor.

A fifth object of the invention is to provide a magnetically stimulated electric system for reciprocating a mass.

Brief Description of Drawings

Fig. 1 is a cutaway view of the coil.

Fig. 2 is an alternate embodiment.

Fig. 3 is an alternate embodiment.

Fig. 4 is a pump.

Fig. 5 is another alternate embodiment.

Description of Preferred Embodiment

The coil **1** is shown in **Fig. 1**. The structure **2** is a high temperature plastic cylinder with a middle divider **3** or, alternatively, could be two cylinders mounted together. The top and bottom are wound separately with copper wires. The result is a "split coil". Many prior art attempts have used a single coil, but they suffer from limited piston travel and must be moved to a starting position by manual or alternate means.

The coil has windings exiting at the top and bottom, as each of the two coils is entirely separate; each also has a terminus at the middle. In an alternate embodiment, both terminus for each coil are wound outwardly again so that all connections **4** are at the corresponding top or bottom of the split coil. The wound coil slides axially over a brass cylinder **5**. Inside the cylinder a steel piston **6** is centrally located along the longitudinal axis. The piston can be a short cylindrical shape **Fig. 2** or a spherical shape.

The coils are energized with electric current and the law of induction moves the mass, depending on the direction of the current and the direction of the windings. These windings are wound clockwise at the top and counter clockwise at the bottom. Voltage is applied to one of the coils to draw the piston toward that end of the cylinder. That current is cut off by a switch and current is applied to the coil at the opposite end. The piston mass is thus pulled in the opposite direction and the current in that coil is switched off and the current in the first coil is reenergized to cause the piston to return.

This process is repeated. The switches are actuated by sensitive metal detectors **7** or, in an alternate embodiment, can be timed **8** or can be based upon the motion of a connecting rod **9** attached to the piston. This prime mover provides numerous advantages. 1) the motor is sparkless; 2) the motor is brushless; 3) the motor's cylinder can be replaced without remanufacturing the windings; 4) the motor is capable of operating at high voltage, low voltage, or even extremely low voltages such as those that are battery generated; 5) changing the coil can change the characteristics of the motor. The motor can be operated in volatile gas environments

like hydrogen or oxygen. Because there is no cylinder pressure to drive the piston, the motor can be operated in high pressure environments such as under the sea or on Venus or Jupiter, and low pressure environments like space. The motor can be accelerated substantially by placing a permanent magnet **10** near an end of the cylinder. The speed of the reciprocation is increased due to the eccentricity of the magnetic field generated by the coils, as long as the cylinder is aligned concentrically with the coil. The piston floats centrally with very low cylinder contact and, consequently, wear.

In an alternate embodiment the coil frame could be made from granite or crystal to emphasize the magnetic effects.

This motor can be used solo or in tandem with other split coils to run a crank shaft to perform work.

This motor can be used as a pump by having the piston pressurize a chamber and force fluid out of the chamber. The chamber has a port to accept fluid to be pumped, which is passed by the normal motion.

In another embodiment the piston is reciprocated and released by switching off the coil and projected out of the cylinder along its axis.

Obviously, numerous (additional) modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.